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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-----------------------------|------------------|
| 10/736,922 | 12/16/2003 | Di Wei | 60246-223; 10,692 | 5821 |
| 26096 | 7590 | 09/21/2005 | | |
| CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009 | | | EXAMINER MAYEKAR, KISHOR | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1753 | |

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/736,922 | Applicant(s) WEI ET AL. | |
| | Examiner Kishor Mayekar | Art Unit 1753 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 13, 23 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specifications fails to describe the variable x in Mn_xO_2 .

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 13, 23, 26, 32 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 13, the variable x in Mn_xO_2 is not defined.

In claim 23, the same is applied to claim 13.

In claim 26, the same is applied to claim 13.

In claim 32, the claim is a duplicate of claim 31. And the claim is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 32. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

In claim 33, the phrase "said substrate" lacks antecedent basis.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-28 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld et al. (US 2003/0021720 A1) in view of Kobayashi (US

6,368,668 B1) and/or Hemme et al. (US 6,627,173 B2). Reisfeld's invention is directed to a control for photocatalytic air purifier. Reisfeld discloses in Figs. 1 and 3 a fluid purification comprises two filter substrates 14 and 16 wherein each of the filter substrates is coated with a suitable catalytic coating, for example a coating of titanium dioxide [paragraph 0024]. The difference between Reisfeld and the above claims are the provision of a coating of one of metal/titanium dioxide and metal oxide/titanium dioxide on one of the filter substrate and a coating of one of titanium dioxide and metal compound/titanium dioxide. Kobayashi shows in a method for producing a photocatalytic material a photocatalyst coating composition comprises^{ing} a photocatalytic metal oxide of titanium dioxide and a metal and/or metal oxide (col. 3, lines 63-67 and paragraph crossing cols. 5 and 6). Kobayashi also shows a substrate with a plurality coating of different photocatalyst composition (col. 10, lines 17-30). Hemme shows the use doped titanium oxide as a catalyst (see abstract). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have incorporated other semiconductor components and precious metals or transition metal oxides in Reisfeld's teachings as shown by Kobayashi and/or Hemme because this would further increase the photocatalytic efficiency

of the photocatalyst material.

As to the subject matter of claims 31 and 32, Reisfeld discloses it in Fig. 1 where the third filter substrate 18 is considered as the recited third substrate.

6. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld '720 as modified by Kobayashi '668 and/or Hemme '173 as applied to claims 21-28 and 31-33 above, and further in view of Hirano et al. (US 2003/0050196 A1. The difference between the references as applied above and the instant claims is the limitation of the first substrate secure to the second substrate. Hirano shows in a photocatalytic filter device a plurality of photocatalytic filters arranged within a same plane (Figs. 10 and 11 and paragraph [0072])). As to the provision of photocatalytic filters of different photocatalyst composition within the same plane, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the references' teachings as shown by Hirano because, as filters of different photocatalyst compositions being known, the provision of different filters within the same plane would have been within the level of ordinary skill in the art. Even in the case that filters of different compositions are placed in

adjacent or proximal to each others, it still would have been obvious to the combination of two known filters to form a combined filter. Further, the motivation to make a specific structure is always related to the properties or uses one skilled in the art would expect the structure to have, *In re Newell* 13 USPQ 2d 1248, *Fromson v. Advance Offset Plate* 225 USPQ 26; *In re Gyurik* 201 USPQ 552.

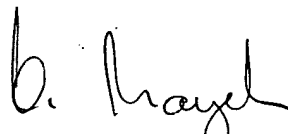
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kishor Mayekar whose telephone number is (571) 272-1339. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair->

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direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "K. Mayekar".

Kishor Mayekar
Primary Examiner
Art Unit 1753